

Sampling		HTO	uncertainty
Location	Date	Bq.L ⁻¹	2 sigma
Roscoff	26/07/2010	0.21	0.01
Concarneau	27/07/2010	0.20	0.01
Atlantic Ocean, loc#1	07/09/2010	0.14	0.01
Atlantic Ocean, loc#2	31/08/2010	0.10	0.01
Atlantic Ocean, loc#3	02/09/2010	0.13	0.01
Atlantic Ocean, loc#4	03/09/2010	0.21	0.01
Atlantic Ocean, loc#5	01/09/2010	0.11	0.01
Atlantic Ocean, loc#6	03/09/2010	0.13	0.01

Table S1: Seawater HTO data documenting the background activities of Atlantic waters entering the Western English Channel. Atlantic Ocean sampling locations are displayed on Fig.1.

Figure caption

Figure S1: Seawater HTO at Gourey (Bq.L⁻¹) between Jan. 2009 and Dec. 2011. Comparison between monthly field measurement data (open circles) and hydrodynamic modelling every 10 min (solid line).

Figure S2: Time-series measurements of tritium in seaweed *Laminaria digitata* collected at Gourey (Left: HTO; Right: OBT). Values are expressed in Bq.L⁻¹, error bars account for measurement uncertainties (2 sigma). Seawater HTO data (dashed line) reported from fig. 2 used as input signal to the model to compute OBT in seaweed (solid line).

Figure S3: Time-series measurements of tritium (HTO and OBT) in *Patella sp.* collected at Gourey. Values are expressed in Bq.L⁻¹, error bars account for measurement uncertainties (2 sigma). Seawater HTO data (dashed line) are reported from Fig. 2 for comparison.

Figure S1

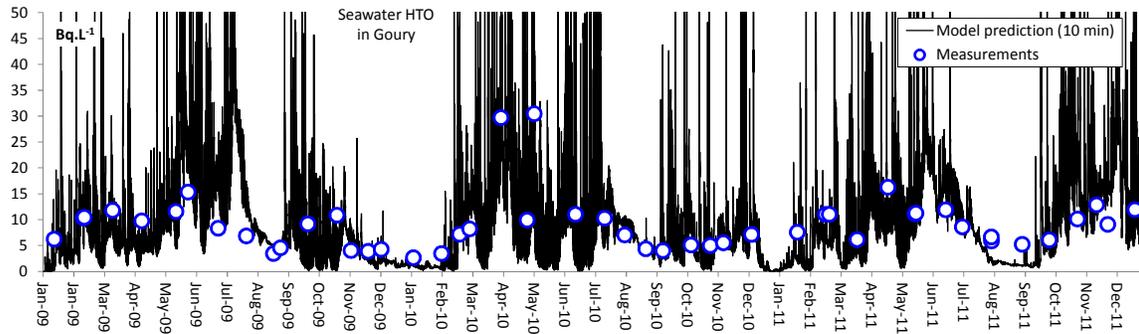


Figure S1: Seawater HTO at Gourey (Bq.L-1) between Jan. 2009 and Dec. 2011. Comparison between monthly field measurement data (open circles) and hydrodynamic modelling every 10 min (solid line).

Figure S2

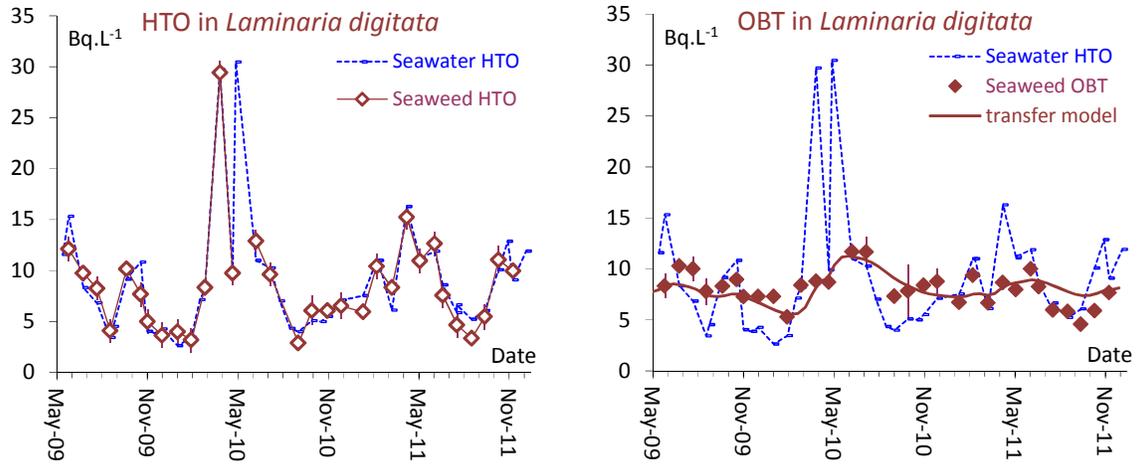


Figure S2: Time-series measurements of tritium in seaweed *Laminaria digitata* collected at Gourey (Left: HTO; Right: OBT). Values are expressed in Bq.L^{-1} , error bars account for measurement uncertainties (2 sigma). Seawater HTO data (dashed line) reported from fig. 2 used as input signal to the model to compute OBT in seaweed (solid line).

Figure S3

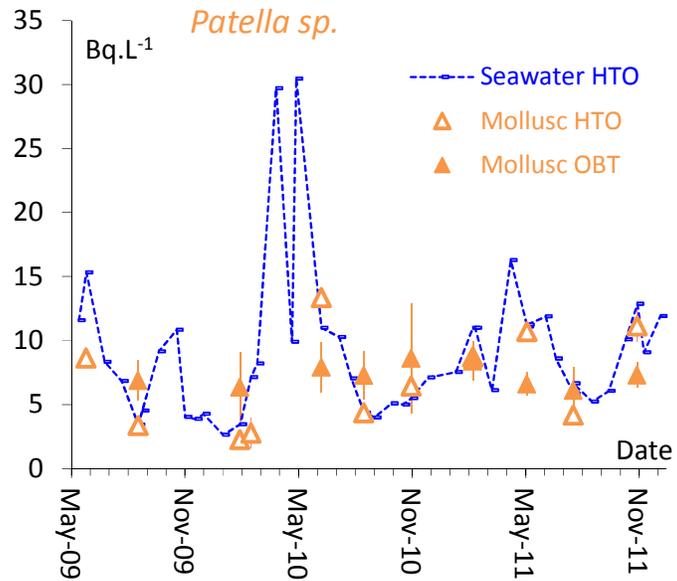


Figure S3: Time-series measurements of tritium (HTO and OBT) in *Patella sp.* collected at Goury. Values are expressed in Bq.L⁻¹, error bars account for measurement uncertainties (2 sigma). Seawater HTO data (dashed line) are reported from Fig. 2 for comparison.